Sources: FCC fiber optic cable applications
AT&T International Circuit Report 9/93

Notes: The geographic market segments are delineated along:

- Region "easily accessible" by existing and planned trans–Atlantic cables.
- Region "easily accessible" by existing and planned trans–Caribbean cables.
- Region "easily accessible" by existing and planned trans–Pacific cables.
- Region mainly served by trans–Atlantic satellites
- Region mainly served by Latin American satellites
- Region mainly served by trans–Pacific satellites

The regions exclude the contiguous U.S., Alaska, Hawaii, Puerto Rico, U.S. Virgin Islands, Mexico, and Canada.

The list includes all countries and territories listed in AT&T circuit reports and COMSAT traffic matrices. While this list may not name all countries of the world, the defined regions are esssentially world–wide. (Note that AOR and POR satellites are able to cover most of the Indian Ocean Region.)

A country is part of a region that is "easily accessible" by cables if:

- there are landing points of one or more trans–oceanic fiber optic cables in the country;
- FCC cable applications or the 9/93 AT&T circuit report list the country as being (or going to be) served through one or more existing (or forthcoming) fiber optic cables; or
- the 9/93 AT&T circuit report lists that cable circuits comprise at least 30 percent of circuits to the country.

Because former Yugoslav and USSR countries are differentiated neither in the AT&T circuit reports nor in FCC–filed cable applications, these countries are treated uniformly and are part of the same geographic market segment. Former Soviet countries are accessible through trans–Atlantic fiber optic cables, AOR satellites, and some POR satellites.

Some countries in regions that are "not easily accessible" by cable may still be served through a few circuits on miscellaneous cables. South Africa, although served by planned fiber optic cables, is excluded from the Europe/Mediterranean/ Middle East segment because is is deemed too distant to be part of the same geographic region.

EXHIBIT HSH-2

COUNTRIES SERVED BY FIBER OPTIC CABLES

Exhibit HSH-2.1

Countries Served by Fiber Optic Cable

Country	Served by # of Cables, in 1993	Served by # of Cables, in 1996	HAW-4/ TPC-3 1988	TAT-8 1988	PTAT-1 1989	TCS-1 1990	NPC 1991	TAT-9 1992	TAT-10 1992	TPC-4 1992	HAW-5/ PACRIM East 1993	TAT-11 1993	Trans-Gulf 1994	CANUS-1/ CANTAT-3 1994	COLUMBUS-2 1994	AMERICAS-1 1994	TAT-12/ TAT-13 1996	TPC-5 1996
Afghanistan	0	1															X	
Algeria	0	1															X	
Anguilla	1	3				A									X	X		
Antigua	1	3				A									X	X		
Argentina	0	2													X	X		
Aruba	0	2													X	X		
Australia	3	4	O							X	X							X
Austria	3	4		O				A	X								X	
Bahamas	0	2													X	X		
Bangladesh	0	1															X	
Barbados	1	3				A									X	X		
Belgium	5	6		O	A			O	X			X					X	
Bermuda	1	1			A													
Brazil	0	2													X	X		
British Virgin Islands	1	3				A									X	X		
Brunei	1	1	O															
Cayman Islands	0	1											L					
Chile	0	2													X	X		
China	1	2								X								X
Colombia	1	3				A									X	X		
Costa Rica	0	1													X			
Cyprus	1	2		O													X	
Czechoslovakia	1	2							X								X	
Denmark	3	5		O				O	X					L			X	
Dominican Republic	1	3				A									X	X		
Dominica	1	3				A									X	X		
Egypt	0	1															X	
El Salvador	0	1													X			
Fiji	2	2	A							X								
Finland	3	4		O				O	X								X	
France	5	6	O	O	A			O				X			X	X	X	
French Antilles	1	3				A									X	X		
French Guiana	1	1		A														
Germany	5	10	O	O	A			O	X					L	X	X	X	X
Gibraltar	1	1						A										
Greece	1	2		O													X	
Grenada	1	3				A									X	X		
Guam	2	3	A							X								X
Guatemala	0	1													X			
Guyana	0	2													X	X		
Haiti	1	3				A									X	X		
Honduras	0	1													X			
Hong Kong	3	4	O				A			X								X
Hungary	0	1															X	
Iceland	0	1												L				
India	1	4						A							X	X	X	
Indonesia	1	2								X								X
Ireland	4	5		O	A			O				X					X	
Israel	2	5		A				A							X	X	X	
Italy	3	7		O				O				X			X	X	X	X
Jamaica	1	2				A							L					
Japan	4	5	O				A			X	X							X
Korea, South	3	4	O				A			X								X
Lebanon	0	1															X	
Luxembourg	2	3		O				O									X	
Malaysia	1	2								X								X
Montserrat	1	3				A									X	X		
Morocco	2	3		A				A									X	
Nepal	1	2						A									X	
Netherlands	4	6		O	A			O	X								X	X
Netherlands Antilles	1	3				A									X	X		
New Zealand	3	4	O							X	X							X
Nicaragua	0	1													X			
Norway	3	4		O				O	X								X	

Exhibit HSH-2.1

Countries Served by Fiber Optic Cable

Country	Served by # of Cables. in 1993	Served by # of Cables. in 1996	HAW-4/ TPC-3 1988	TAT-8 1988	PTAT-1 1989	TCS-1 1990	NPC 1991	TAT-9 1992	TAT-10 1992	TPC-4 1992	HAW-5/ PACRIM East 1993	TAT-11 1993	Trans-Gulf 1994	CANUS-1/ CANTAT-3 1994	COLUMBUS-2 1994	AMERICAS-1 1994	TAT-12/ TAT-13 1996	TPC-5 1996
Pakistan	0	1															X	
Panama	1	3				A							L		X			
Papua-New Guinea	2	2	A								A							
Paraguay	0	2													X	X		
Phillipines	3	4	O							X	A							X
Poland	1	2							X								X	
Portugal	3	6		O				A				X			X	X	X	
Romania	0	1															X	
Saipan	0	1																X
Saudi Arabia	0	3													X	X	X	
Singapore	2	3	O							X								X
South Africa	0	3													X	X	X	
Spain	5	9	O	O	A			O				X			X	X	X	X
Sri Lanka	1	2						A									X	
St. Kitts & Nevis	1	3				A									X	X		
St. Lucia	1	3				A									X	X		
St. Vincent	1	3				A									X	X		
Sweden	4	5		O	A			O	X								X	
Switzerland	5	7		O	A			O	X			X					X	X
Syria	0	1															X	
Taiwan	3	4	O							X	X							X
Thailand	1	2								X								X
Trinidad and Tobago	1	3				A									X	X		
Tunisia	1	2		A													X	
Turkey	3	4		O				A	X								X	
United Kingdom	6	9	O	O	A			O	X			X		L			X	X
Uruguay	0	2													X	X		
USSR	0	2													X		X	
Venezuela	0	2													X	X		
Vietnam	1	1		A														
West Indies	0	1														X		
Yemen	0	1															X	
Yugoslavia	2	3		O				O									X	
TOTAL COUNTRIES			16	25	10	18	3	24	13	14	6	8	3	4	41	35	41	20

NOTES:
Excludes Canada, Mexico, and Puerto Rico.
X -- service listing attached to cable applications filed with FCC.
O -- service indicated by cable ownership (detailed service listing not available).
A -- service listed in the 9/93 AT&T Circuit Report filed with the FCC.
L -- service indicated by landing points (detailed service listing not available).

Exhibit HSH–2.2

Countries Served by Fiber Optic Cable -- By Year

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996
Afghanistan									1
Algeria									1
Anguilla			1	1	1	1	1	1	1
Antigua			1	1	1	1	1	1	1
Argentina							1	1	1
Aruba							1	1	1
Australia	1	1	1	1	1	1	1	1	1
Austria	1	1	1	1	1	1	1	1	1
Bahamas							1	1	1
Bangladesh									1
Barbados			1	1	1	1	1	1	1
Belgium	1	1	1	1	1	1	1	1	1
Bermuda		1	1	1	1	1	1	1	1
Brazil							1	1	1
British Virgin Islands			1	1	1	1	1	1	1
Brunei	1	1	1	1	1	1	1	1	1
Cayman Islands							1	1	1
Chile							1	1	1
China					1	1	1	1	1
Colombia			1	1	1	1	1	1	1
Costa Rica							1	1	1
Cyprus	1	1	1	1	1	1	1	1	1
Czechoslovakia					1	1	1	1	1
Denmark	1	1	1	1	1	1	1	1	1
Dominican Republic			1	1	1	1	1	1	1
Dominica			1	1	1	1	1	1	1
Egypt									1
El Salvador							1	1	1
Fiji	1	1	1	1	1	1	1	1	1
Finland	1	1	1	1	1	1	1	1	1
France	1	1	1	1	1	1	1	1	1
French Antilles			1	1	1	1	1	1	1
French Guiana	1	1	1	1	1	1	1	1	1
Germany	1	1	1	1	1	1	1	1	1
Gibraltar					1	1	1	1	1
Greece	1	1	1	1	1	1	1	1	1
Grenada			1	1	1	1	1	1	1
Guam	1	1	1	1	1	1	1	1	1
Guatemala							1	1	1
Guyana							1	1	1
Haiti			1	1	1	1	1	1	1
Honduras							1	1	1
Hong Kong	1	1	1	1	1	1	1	1	1
Hungary									1
Iceland							1	1	1
India					1	1	1	1	1
Indonesia					1	1	1	1	1
Ireland	1	1	1	1	1	1	1	1	1
Israel	1	1	1	1	1	1	1	1	1
Italy	1	1	1	1	1	1	1	1	1
Jamaica			1	1	1	1	1	1	1
Japan	1	1	1	1	1	1	1	1	1

Exhibit HSH–2.2

Countries Served by Fiber Optic Cable -- By Year

Country	1988	1989	1990	1991	1992	1993	1994	1995	1996
Korea, South	1	1	1	1	1	1	1	1	1
Lebanon									1
Luxembourg	1	1	1	1	1	1	1	1	1
Malaysia					1	1	1	1	1
Montserrat			1	1	1	1	1	1	1
Morocco	1	1	1	1	1	1	1	1	1
Nepal					1	1	1	1	1
Netherlands	1	1	1	1	1	1	1	1	1
Netherlands Antilles			1	1	1	1	1	1	1
New Zealand	1	1	1	1	1	1	1	1	1
Nicaragua							1	1	1
Norway	1	1	1	1	1	1	1	1	1
Pakistan									1
Panama			1	1	1	1	1	1	1
Papua-New Guinea	1	1	1	1	1	1	1	1	1
Paraguay							1	1	1
Phillipines	1	1	1	1	1	1	1	1	1
Poland					1	1	1	1	1
Portugal	1	1	1	1	1	1	1	1	1
Romania									1
Saipan									1
Saudi Arabia							1	1	1
Singapore	1	1	1	1	1	1	1	1	1
South Africa							1	1	1
Spain	1	1	1	1	1	1	1	1	1
Sri Lanka					1	1	1	1	1
St. Kitts & Nevis			1	1	1	1	1	1	1
St. Lucia			1	1	1	1	1	1	1
St. Vincent			1	1	1	1	1	1	1
Sweden	1	1	1	1	1	1	1	1	1
Switzerland	1	1	1	1	1	1	1	1	1
Syria									1
Taiwan	1	1	1	1	1	1	1	1	1
Thailand					1	1	1	1	1
Trinidad and Tobago			1	1	1	1	1	1	1
Tunisia	1	1	1	1	1	1	1	1	1
Turkey	1	1	1	1	1	1	1	1	1
United Kingdom	1	1	1	1	1	1	1	1	1
Uruguay							1	1	1
USSR							1	1	1
Venezuela							1	1	1
Vietnam	1	1	1	1	1	1	1	1	1
West Indies							1	1	1
Yemen									1
Yugoslavia	1	1	1	1	1	1	1	1	1
TOTAL COUNTRIES	37	38	56	56	66	66	86	86	97

NOTES:
1 = yes, served through one or more fiber optic cables.
Source: Exhibit HSH–2.1

EXHIBIT HSH-3

AT&T REGIONAL FACILITY USE

Exhibit HSH-3

AT&T REGIONAL FACILITY USE

	1988	1989	1990	1991	1992	1993
1: Caribbean/Latin America						
Cable						
Total activated circuits	2539	3582	5173	5285	5479	5155
Idle circuits	730	1470	2540	2064	2220	2000
CMS circuits	349	354	417	1244	1578	1832
Utilized circuits	1809	2112	2633	3221	3259	3155
Total derived circuits	2158	2466	3050	4465	4837	4987
Compression rate	1.2	1.2	1.2	1.4	1.5	1.6
Private Line	78	108	154	164	215	238
Switched Voice	1731	2004	2479	3057	3044	2917
COMSAT						
Total activated circuits	4790	4839	4512	4239	3038	3127
Idle circuits	629	429	0	0	0	0
CMS circuits	0	181	1018	1724	3430	4345
Utilized circuits	4161	4410	4512	4239	3038	3127
Total derived circuits	4161	4591	5530	5963	6468	7472
Compression rate	1.0	1.0	1.2	1.4	2.1	2.4
Private Line	47	84	166	165	254	518
Switched Voice	4114	4326	4346	4074	2784	2609
Total						
Utilized circuits	5970	6522	7145	7460	6297	6282
Private Line	125	192	320	329	469	756
Switched Voice	5845	6330	6825	7131	5828	5526
COMSAT Share						
Utilized circuits	70%	68%	63%	57%	48%	50%
Total derived circuits	66%	65%	64%	57%	57%	60%
2: East Asia / Oceania						
Cable						
Total activated circuits	871	4022	4098	4898	5471	7739
Idle circuits	16	1990	1217	1446	1049	2086
CMS circuits	498	559	1327	2066	2611	2741
Utilized circuits	855	2032	2881	3452	4422	5653
Total derived circuits	1353	2591	4208	5518	7033	8394
Compression rate	1.6	1.3	1.5	1.6	1.6	1.5
Private Line	83	269	470	710	1123	1492
Switched Voice	772	1763	2411	2742	3299	4161
COMSAT						
Total activated circuits	4628	4130	3046	2423	2677	2360
Idle circuits	0	0	0	0	0	0
CMS circuits	600	1916	2930	3862	4449	3958
Utilized circuits	4628	4130	3046	2423	2677	2360
Total derived circuits	5228	6046	5976	6285	7126	6318
Compression rate	1.1	1.5	2.0	2.6	2.7	2.7
Private Line	214	333	454	541	704	718
Switched Voice	4414	3797	2592	1882	1973	1642
Total						
Utilized circuits	5483	6162	5927	5875	7099	8013
Private Line	297	602	924	1251	1827	2210
Switched Voice	5186	5560	5003	4624	5272	5803
COMSAT Share						
Utilized circuits	84%	67%	51%	41%	38%	29%
Total derived circuits	79%	70%	59%	53%	50%	43%

Exhibit HSH-3

AT&T REGIONAL FACILITY USE

	1988	1989	1990	1991	1992	1993
3: Europe/Mediterranean/Middle East						
Cable						
Total activated circuits	11671	11552	12442	13724	16335	27649
Idle circuits	4361	3560	3590	3960	5401	15953
CMS circuits	3863	5474	6223	8620	11899	12968
Utilized circuits	7310	7992	8852	9764	10934	11696
Total derived circuits	11173	13466	15075	18384	22833	24664
Compression rate	1.5	1.7	1.7	1.9	2.1	2.1
Private Line	965	1385	1998	2809	3871	5145
Switched Voice	6345	6607	6854	6955	7063	6551
COMSAT						
Total activated circuits	10359	7118	5342	4953	4985	4544
Idle circuits	608	753	0	0	0	0
CMS circuits	503	3949	5758	7778	8594	8675
Utilized circuits	9751	6365	5342	4953	4985	4544
Total derived circuits	10254	10314	11100	12731	13579	13219
Compression rate	1.1	1.6	2.1	2.6	2.7	2.9
Private Line	207	285	261	302	300	249
Switched Voice	9544	6080	5081	4651	4685	4295
Total						
Utilized circuits	17061	14357	14194	14717	15919	16240
Private Line	1172	1670	2259	3111	4171	5394
Switched Voice	15889	12687	11935	11606	11748	10846
COMSAT Share						
Utilized circuits	57%	44%	38%	34%	31%	28%
Total derived circuits	48%	43%	42%	41%	37%	35%
4: Rest of Latin America						
Cable						
Total activated circuits	30	30	34	34	35	31
Idle circuits	26	26	26	30	30	26
CMS circuits	0	0	0	0	0	0
Utilized circuits	4	4	8	4	5	5
Total derived circuits	4	4	8	4	5	5
Compression rate	1.0	1.0	1.0	1.0	1.0	1.0
Private Line	0	0	4	4	5	5
Switched Voice	4	4	4	0	0	0
COMSAT						
Total activated circuits	950	949	859	924	817	556
Idle circuits	247	237	0	0	0	0
CMS circuits	0	60	135	284	441	840
Utilized circuits	703	712	859	924	817	556
Total derived circuits	703	772	994	1208	1258	1396
Compression rate	1.0	1.1	1.2	1.3	1.5	2.5
Private Line	11	11	20	22	25	26
Switched Voice	692	701	839	902	792	530
Total						
Utilized circuits	707	716	867	928	822	561
Private Line	11	11	24	26	30	31
Switched Voice	696	705	843	902	792	530
COMSAT Share						
Utilized circuits	99%	99%	99%	100%	99%	99%
Total derived circuits	99%	99%	99%	100%	100%	100%

Exhibit HSH–3

AT&T REGIONAL FACILITY USE

	1988	1989	1990	1991	1992	1993
5: Rest of AOR						
Cable						
Total activated circuits	15	15	15	15	15	6
Idle circuits	10	10	10	10	15	6
CMS circuits	0	0	0	0	0	0
Utilized circuits	5	5	5	5	0	0
Total derived circuits	5	5	5	5	0	0
Compression rate	1.0	1.0	1.0	1.0		
Private Line	0	0	0	0	0	0
Switched Voice	5	5	5	5	0	0
COMSAT						
Total activated circuits	1939	1935	1646	1646	1667	1518
Idle circuits	633	563	0	0	0	0
CMS circuits	0	30	266	1471	1398	1273
Utilized circuits	1306	1372	1646	1646	1667	1518
Total derived circuits	1306	1402	1912	3117	3065	2791
Compression rate	1.0	1.0	1.2	1.9	1.8	1.8
Private Line	6	3	36	8	69	71
Switched Voice	1300	1369	1610	1638	1598	1447
Total						
Utilized circuits	1311	1377	1651	1651	1667	1518
Private Line	6	3	36	8	69	71
Switched Voice	1305	1374	1615	1643	1598	1447
COMSAT Share						
Utilized circuits	100%	100%	100%	100%	100%	100%
Total derived circuits	100%	100%	100%	100%	100%	100%
6: Rest of POR						
Cable						
Total activated circuits	0	0	0	0	0	0
Idle circuits	0	0	0	0	0	0
CMS circuits	0	0	0	0	0	0
Utilized circuits	0	0	0	0	0	0
Total derived circuits	0	0	0	0	0	0
Compression rate						
Private Line	0	0	0	0	0	0
Switched Voice	0	0	0	0	0	0
COMSAT						
Total activated circuits	79	85	93	101	97	101
Idle circuits	0	0	0	0	0	0
CMS circuits	0	0	0	0	59	78
Utilized circuits	79	85	93	101	97	101
Total derived circuits	79	85	93	101	156	179
Compression rate	1.0	1.0	1.0	1.0	1.6	1.8
Private Line	1	1	1	4	4	3
Switched Voice	78	84	92	97	93	98
Total						
Utilized circuits	79	85	93	101	97	101
Private Line	1	1	1	4	4	3
Switched Voice	78	84	92	97	93	98
COMSAT Share						
Utilized circuits	100%	100%	100%	100%	100%	100%
Total derived circuits	100%	100%	100%	100%	100%	100%

Exhibit HSH–3

AT&T REGIONAL FACILITY USE

	1988	1989	1990	1991	1992	1993
Total — All Regions						
Cable						
Total activated circuits	15126	19201	21762	23956	27335	40580
Idle circuits	5143	7056	7383	7510	8715	20071
CMS circuits	4710	6387	7967	11930	16088	17541
Utilized circuits	9983	12145	14379	16446	18620	20509
Total derived circuits	14693	18532	22346	28376	34708	38050
Compression rate	1.5	1.5	1.6	1.7	1.9	1.9
Private Line	1126	1762	2626	3687	5214	6880
Switched Voice	8857	10383	11753	12759	13406	13629
COMSAT						
Total activated circuits	22745	19056	15498	14286	13281	12206
Idle circuits	2117	1982	0	0	0	0
CMS circuits	1103	6136	10107	15119	18371	19169
Utilized circuits	20628	17074	15498	14286	13281	12206
Total derived circuits	21731	23210	25605	29405	31652	31375
Compression rate	1.1	1.4	1.7	2.1	2.4	2.6
Private Line	486	717	938	1042	1356	1585
Switched Voice	20142	16357	14560	13244	11925	10621
Total						
Utilized circuits	30611	29219	29877	30732	31901	32715
Private Line	1612	2479	3564	4729	6570	8465
Switched Voice	28999	26740	26313	26003	25331	24250
COMSAT Share						
Utilized circuits	67%	58%	52%	46%	42%	37%
Total derived circuits	60%	56%	53%	51%	48%	45%

NOTES:
All circuits are in 64 kbps-equivalents, except for CMS and Total derived circuits which are in voice equivalent circuits.
Aggregated from country-by-country data according to Exhibit HSH–1.
Source: AT&T Circuit Reports 1988–1993.

Not all activated circuits may be utilized at a given time.
CMS is an acronym for "Circuit Multiplication Service". CMS circuits are the additional circuits gained through digital compression.
Utilized Circuits equals Total activated circuits minus Idle circuits.
Total derived circuits equals Utilized circuits plus CMS circuits.
Compression rate is the fraction of Total derived circuits to Utilized circuits.

EXHIBIT HSH-4

AT&T TRANS-OCEANIC CABLE FILL RATES

Exhibit HSH–4.1

AT&T TRANS-PACIFIC CABLES

	1988	1989	1990	1991	1992	1993
Anzcan-D: service start = 1984						
Design Capacity	1380	1380	1380	1380	1380	1380
[2] Notional Capacity	1380	1380	1380	1380	1380	1380
AT&T share of design cap.	444	444	444	444	444	444
[4] AT&T share of notional cap.	444	444	444	444	444	444
Total activated circuits	444	444	134	122	119	112
Idle circuits	13	226	29	97	69	103
CMS circuits	0	0	0	0	0	0
Utilized circuits	431	218	105	25	50	9
Total derived circuits	431	218	105	25	50	9
Compression rate	1.0	1.0	1.0	1.0	1.0	1.0
AT&T Fill Rate	97.1%	49.1%	23.6%	5.6%	11.3%	2.0%
Other Fill Rate	97.1%	49.1%	23.6%	5.6%	11.3%	2.0%
Average Fill Rate	97.1%	49.1%	23.6%	5.6%	11.3%	2.0%
Private Line	21	25	15	10	6	5
Switched Voice	410	193	90	15	44	4
AT&T Switched Voice Fill Rate	92.3%	43.5%	20.3%	3.4%	9.9%	0.9%
HAW – 4 / TPC – 3: service start =	1988					
Design Capacity	7560	7560	7560	7560	7560	7560
[1] Notional Capacity	7560	7560	7560	7560	7560	7560
AT&T share of design cap.	5095	5095	5095	5095	5095	5095
[3] AT&T share of notional cap.	5095	5095	5095	5095	5095	5095
Total activated circuits	0	3147	3519	3521	3589	3675
Idle circuits	0	1729	1065	633	512	846
CMS circuits	0	360	1166	1951	2223	2189
Utilized circuits	0	1418	2454	2888	3077	2829
Total derived circuits	0	1778	3620	4839	5300	5018
Compression rate		1.3	1.5	1.7	1.7	1.8
AT&T Fill Rate	0.0%	27.8%	48.2%	56.7%	60.4%	55.5%
Other Fill Rate	0.0%	27.8%	48.2%	56.7%	60.4%	55.5%
Average Fill Rate	0.0%	27.8%	48.2%	56.7%	60.4%	55.5%
Private Line	0	180	415	601	826	911
Switched Voice	0	1238	2039	2287	2251	1918
AT&T Switched Voice Fill Rate		24.3%	40.0%	44.9%	44.2%	37.6%
HAW – 5 / PacRim East: service start =	1993					
Design Capacity						7560
[1] Notional Capacity						3536
AT&T share of design cap.						2181
[3] AT&T share of notional cap.						1020
Total activated circuits	0	0	0	0	0	1924
Idle circuits	0	0	0	0	0	818
CMS circuits	0	0	0	0	0	150
Utilized circuits	0	0	0	0	0	1106
Total derived circuits	0	0	0	0	0	1256
Compression rate						1.1
AT&T Fill Rate						50.7%
Other Fill Rate						50.7%
Average Fill Rate						50.7%
Private Line	0	0	0	0	0	114
Switched Voice	0	0	0	0	0	992
AT&T Switched Voice Fill Rate						45.5%
HAW – 3/TPC – 2: service start =	1976	to	1993			
Design Capacity	845	845	845	845	845	
[1] Notional Capacity	743	743	743	743	743	
AT&T share of design cap.	545	545	545	545	545	
[3] AT&T share of notional cap.	479	479	479	479	479	
Total activated circuits	346	350	363	363	363	0
Idle circuits	1	8	66	113	135	0
CMS circuits	0	0	0	0	0	0
Utilized circuits	345	342	297	250	228	0
Total derived circuits	345	342	297	250	228	0
Compression rate	1.0	1.0	1.0	1.0	1.0	
AT&T Fill Rate	63.3%	62.8%	54.5%	45.9%	41.9%	
Other Fill Rate	63.3%	62.8%	54.5%	45.9%	41.9%	
Average Fill Rate	63.3%	62.8%	54.5%	45.9%	41.9%	
Private Line	50	58	38	38	21	0
Switched Voice	295	284	259	212	207	0
AT&T Switched Voice Fill Rate	54.2%	52.1%	47.5%	38.9%	38.0%	

Exhibit HSH–4.1

AT&T TRANS-PACIFIC CABLES

	1988	1989	1990	1991	1992	1993
TPC – 4: service start = 1992						
Design Capacity					15120	15120
[1] Notional Capacity					14430	14430
AT&T share of design cap.					7136	7136
[3] AT&T share of notional cap.					6810	6810
Total activated circuits	0	0	0	0	509	1230
Idle circuits	0	0	0	0	0	0
CMS circuits	0	0	0	0	0	315
Utilized circuits	0	0	0	0	509	1230
Total derived circuits	0	0	0	0	509	1545
Compression rate					1.0	1.3
AT&T Fill Rate					7.1%	17.2%
Other Fill Rate					7.1%	17.2%
Average Fill Rate					7.1%	17.2%
Private Line	0	0	0	0	60	246
Switched Voice	0	0	0	0	449	984
AT&T Switched Voice Fill Rate					6.3%	13.8%
NPC: service start = 1991						
Design Capacity				12096	12096	12096
[2] Notional Capacity				12096	12096	12096
AT&T share of design cap.				810	810	810
[4] AT&T share of notional cap.				810	810	810
Total activated circuits	0	0	0	810	810	750
Idle circuits	0	0	0	540	270	301
CMS circuits	0	0	0	84	357	87
Utilized circuits	0	0	0	270	540	449
Total derived circuits	0	0	0	354	897	536
Compression rate				1.3	1.7	1.2
AT&T Fill Rate				33.3%	66.7%	55.4%
Other Fill Rate				33.3%	66.7%	55.4%
Average Fill Rate				33.3%	66.7%	55.4%
Private Line	0	0	0	60	210	216
Switched Voice	0	0	0	210	330	233
AT&T Switched Voice Fill Rate				25.9%	40.7%	28.8%
HAW – 2 / TPC – 1: service start =	1964	to	1993			
Design Capacity	142	142	142	142	142	
[1] Notional Capacity	139	139	139	139	139	
AT&T share of design cap.	74	74	74	74	74	
[3] AT&T share of notional cap.	72	72	72	72	72	
Total activated circuits	63	63	64	64	63	0
Idle circuits	2	27	57	63	63	0
CMS circuits	0	0	0	0	0	0
Utilized circuits	61	36	7	1	0	0
Total derived circuits	61	36	7	1	0	0
Compression rate	1.0	1.0	1.0	1.0		
AT&T Fill Rate	82.9%	48.9%	9.5%	1.4%	0.0%	
Other Fill Rate	82.9%	48.9%	9.5%	1.4%	0.0%	
Average Fill Rate	82.9%	48.9%	9.5%	1.4%	0.0%	
Private Line	12	6	2	1	0	0
Switched Voice	49	30	5	0	0	0
AT&T Switched Voice Fill Rate	66.6%	40.8%	6.8%	0.0%	0.0%	

Exhibit HSH–4.1

AT&T TRANS-PACIFIC CABLES

	1988	1989	1990	1991	1992	1993
Total Trans-Pacific Cables						
Design Capacity	9927	9927	9927	22023	37143	43716
Notional Capacity	9822	9822	9822	21918	36348	39002
AT&T share of design cap.	6157	6157	6157	6967	14103	15665
AT&T share of notional cap.	6090	6090	6090	6900	13710	14179
Utilized circuits	837	2014	2863	3434	4404	5623
Total derived circuits	837	2374	4029	5469	6984	8364
Compression rate	1.0	1.2	1.4	1.6	1.6	1.5
AT&T Fill Rate	13.6%	32.7%	46.5%	49.3%	31.2%	35.9%
Other Fill Rate	13.6%	32.7%	46.5%	49.3%	31.2%	35.9%
Average Fill Rate	13.6%	32.7%	46.5%	49.3%	31.2%	35.9%
Private Line	83	269	470	710	1123	1492
Switched Voice	754	1745	2393	2724	3281	4131
AT&T Switched Voice Fill Rate	12.2%	28.3%	38.9%	39.1%	23.3%	26.4%

NOTES:
All circuits are in 64 kbps-equivalents, except for CMS and Total derived circuits which are in voice equivalent circuits.
[1] Notional Capacity from Exhibit HSH-10.3.
[2] Notional Capacity assumed to be Design Capacity.
[3] AT&T Notional Capacity from Exhibit HSH-10.3.
[4] AT&T Notional Capacity assumed to be maximum of activated circuits.
Aggregated from country-by-country and facility-specific data.
Does not include traffic on miscellaneous cables.
Source: AT&T Circuit Reports 1988–1993.

Design Capacity is defined as the cable's total useable capacity in 64 kbps. Design Capacity does not include capacity designated for cable restoration or capacity on standby pairs.
Notional Capacity is the fraction of the design capacity that is directly allocated to subscribers.
Not all activated circuits may be utilized at a given time.
CMS is an acronym for "Circuit Multiplication Service". CMS circuits are the additional circuits gained through digital compression.
Utilized Circuits equals Total activated circuits minus Idle circuits.
Total derived circuits equals Utilized Circuits plus CMS circuits.
Compression rate is the fraction of Total derived circuits to Utilized circuits.
Fill Rates are defined as the fraction of Utilized circuits divided by the Design Capacity. Fill Rates of other carriers are assumed to be equal to AT&T Fill Rates.

Exhibit HSH–4.2

AT&T TRANS-ATLANTIC CABLES

	1988	1989	1990	1991	1992	1993
TAT-5: service start = 1970	to	1993				
Design Capacity	845	845	845	845	845	
[1] Notional Capacity	721	721	721	721	721	
AT&T share of design cap.	590	590	590	590	590	
[3] AT&T share of notional cap.	503	503	503	503	503	
Total activated circuits	527	550	550	550	550	0
Idle circuits	16	55	120	206	514	0
CMS circuits	0	0	0	0	0	0
Utilized circuits	511	495	430	344	36	0
Total derived circuits	511	495	430	344	36	0
Compression rate	1.0	1.0	1.0	1.0	1.0	
AT&T Fill Rate	86.7%	84.0%	72.9%	58.4%	6.1%	
Other Fill Rate	86.7%	84.0%	72.9%	58.4%	6.1%	
Average Fill Rate	86.7%	84.0%	72.9%	58.4%	6.1%	
Private Line	4	3	2	2	0	0
Switched Voice	507	492	428	342	36	0
AT&T Switched Voice Fill Rate	86.0%	83.5%	72.6%	58.0%	6.1%	
TAT-6: service start = 1976						
Design Capacity	4000	4000	4000	4000	4000	4000
[1] Notional Capacity	2372	2372	2372	2372	2372	2372
AT&T share of design cap.	3196	3196	3196	3196	3196	3196
[3] AT&T share of notional cap.	1895	1895	1895	1895	1895	1895
Total activated circuits	3163	3167	3181	3181	3181	3181
Idle circuits	175	319	569	1046	1611	2540
CMS circuits	0	0	0	0	0	0
Utilized circuits	2988	2848	2612	2135	1570	641
Total derived circuits	2988	2848	2612	2135	1570	641
Compression rate	1.0	1.0	1.0	1.0	1.0	1.0
AT&T Fill Rate	93.5%	89.1%	81.7%	66.8%	49.1%	20.1%
Other Fill Rate	93.5%	89.1%	81.7%	66.8%	49.1%	20.1%
Average Fill Rate	93.5%	89.1%	81.7%	66.8%	49.1%	20.1%
Private Line	133	128	102	75	46	41
Switched Voice	2855	2720	2510	2060	1524	600
AT&T Switched Voice Fill Rate	89.3%	85.1%	78.5%	64.5%	47.7%	18.8%
TAT-7: service start = 1983						
Design Capacity	4246	4246	4246	4246	4246	4246
[2] Notional Capacity	4246	4246	4246	4246	4246	4246
AT&T share of design cap.	2783	2783	2783	2783	2783	2783
[4] AT&T share of notional cap.	2783	2783	2783	2783	2783	2783
Total activated circuits	2698	2698	2698	2730	2730	2783
Idle circuits	170	448	520	734	1547	2354
CMS circuits	0	0	0	0	0	0
Utilized circuits	2528	2250	2178	1996	1183	429
Total derived circuits	2528	2250	2178	1996	1183	429
Compression rate	1.0	1.0	1.0	1.0	1.0	1.0
AT&T Fill Rate	90.8%	80.8%	78.3%	71.7%	42.5%	15.4%
Other Fill Rate	90.8%	80.8%	78.3%	71.7%	42.5%	15.4%
Average Fill Rate	90.8%	80.8%	78.3%	71.7%	42.5%	15.4%
Private Line	455	379	338	284	273	263
Switched Voice	2073	1871	1840	1712	910	166
AT&T Switched Voice Fill Rate	74.5%	67.2%	66.1%	61.5%	32.7%	6.0%
TAT-8: service start = 1988						
Design Capacity	7560	7560	7560	7560	7560	7560
[1] Notional Capacity	7560	7560	7560	7560	7560	7560
AT&T share of design cap.	5150	5150	5150	5150	5150	5150
[3] AT&T share of notional cap.	5150	5150	5150	5150	5150	5150
Total activated circuits	4696	4340	4340	4310	4387	4570
Idle circuits	3992	2238	1304	553	460	338
CMS circuits	0	2475	4230	6957	6852	6481
Utilized circuits	704	2102	3036	3757	3927	4232
Total derived circuits	704	4577	7266	10714	10779	10713
Compression rate	1.0	2.2	2.4	2.9	2.7	2.5
AT&T Fill Rate	13.7%	40.8%	59.0%	73.0%	76.3%	82.2%
Other Fill Rate	13.7%	40.8%	59.0%	73.0%	76.3%	82.2%
Average Fill Rate	13.7%	40.8%	59.0%	73.0%	76.3%	82.2%
Private Line	371	873	1196	1498	1609	1845
Switched Voice	333	1229	1840	2259	2318	2387
AT&T Switched Voice Fill Rate	6.5%	23.9%	35.7%	43.9%	45.0%	46.3%

Exhibit HSH–4.2

AT&T TRANS-ATLANTIC CABLES

	1988	1989	1990	1991	1992	1993
TAT-9: service start = 1992						
Design Capacity					15120	15120
[1] Notional Capacity					15120	15120
AT&T share of design cap.					8000	8000
[3] AT&T share of notional cap.					8000	8000
Total activated circuits	0	0	0	0	2192	7584
Idle circuits	0	0	0	0	0	4274
CMS circuits	0	0	0	0	2666	4285
Utilized circuits	0	0	0	0	2192	3310
Total derived circuits	0	0	0	0	4858	7595
Compression rate					2.2	2.3
AT&T Fill Rate					27.4%	41.4%
Other Fill Rate					27.4%	41.4%
Average Fill Rate					27.4%	41.4%
Private Line	0	0	0	0	715	999
Switched Voice	0	0	0	0	1477	2311
AT&T Switched Voice Fill Rate					18.5%	28.9%
TAT-10: service start = 1992						
Design Capacity					22680	22680
[1] Notional Capacity					16560	16560
AT&T share of design cap.					9614	9614
[3] AT&T share of notional cap.					7020	7020
Total activated circuits	0	0	0	0	343	6570
Idle circuits	0	0	0	0	0	5368
CMS circuits	0	0	0	0	119	419
Utilized circuits	0	0	0	0	343	1202
Total derived circuits	0	0	0	0	462	1621
Compression rate					1.3	1.3
AT&T Fill Rate					3.6%	12.5%
Other Fill Rate					3.6%	12.5%
Average Fill Rate					3.6%	12.5%
Private Line	0	0	0	0	102	691
Switched Voice	0	0	0	0	241	511
AT&T Switched Voice Fill Rate					2.5%	5.3%
TAT-11: service start = 1993						
Design Capacity						22680
[1] Notional Capacity						12330
AT&T share of design cap.						11478
[3] AT&T share of notional cap.						6240
Total activated circuits	0	0	0	0	0	30
Idle circuits	0	0	0	0	0	0
CMS circuits	0	0	0	0	0	0
Utilized circuits	0	0	0	0	0	30
Total derived circuits	0	0	0	0	0	30
Compression rate						1.0
AT&T Fill Rate						0.3%
Other Fill Rate						0.3%
Average Fill Rate						0.3%
Private Line	0	0	0	0	0	30
Switched Voice	0	0	0	0	0	0
AT&T Switched Voice Fill Rate						0.0%
PTAT-1: service start = 1989						
Design Capacity		17010	17010	17010	17010	17010
[2] Notional Capacity		17010	17010	17010	17010	17010
AT&T share of design cap.		2370	2370	2370	2370	2370
[4] AT&T share of notional cap.		2370	2370	2370	2370	2370
Total activated circuits	0	210	1710	2370	2370	2370
Idle circuits	0	179	1087	902	664	483
CMS circuits	0	0	600	989	1910	1761
Utilized circuits	0	31	623	1468	1706	1887
Total derived circuits	0	31	1223	2457	3616	3648
Compression rate		1.0	2.0	1.7	2.1	1.9
AT&T Fill Rate		1.3%	26.3%	61.9%	72.0%	79.6%
Other Fill Rate		1.3%	26.3%	61.9%	72.0%	79.6%
Average Fill Rate		1.3%	26.3%	61.9%	72.0%	79.6%
Private Line	0	1	363	954	1131	1281
Switched Voice	0	30	260	514	575	606
AT&T Switched Voice Fill Rate		1.3%	11.0%	21.7%	24.3%	25.6%

Exhibit HSH–4.2

AT&T TRANS–ATLANTIC CABLES

	1988	1989	1990	1991	1992	1993
Total Trans–Atlantic Cables						
Design Capacity	16651	33661	33661	33661	71461	93296
Notional Capacity	14899	31909	31909	31909	63589	75198
AT&T share of design cap.	11718	14088	14088	14088	31702	42591
AT&T share of notional cap.	10331	12701	12701	12701	27721	33458
Utilized circuits	6731	7726	8879	9700	10957	11731
Total derived circuits	6731	10201	13709	17646	22504	24677
Compression rate	1.0	1.3	1.5	1.8	2.1	2.1
AT&T Fill Rate	57.4%	54.8%	63.0%	68.9%	34.6%	27.5%
Other Fill Rate	57.4%	54.8%	63.0%	68.9%	34.6%	27.5%
Average Fill Rate	57.4%	54.8%	63.0%	68.9%	34.6%	27.5%
Private Line	963	1384	2001	2813	3876	5150
Switched Voice	5768	6342	6878	6887	7081	6581
AT&T Switched Voice Fill Rate	49.2%	45.0%	48.8%	48.9%	22.3%	15.5%

NOTES:
All circuits are in 64 kbps–equivalents, except for CMS and Total derived circuits which are in voice equivalent circuits.
[1] Notional Capacity from Exhibit HSH–10.3.
[2] Notional Capacity assumed to be Design Capacity.
[3] AT&T Notional Capacity from Exhibit HSH–10.3.
[4] AT&T Notional Capacity assumed to be maximum of activated circuits.
Aggregated from country–by–country and facility–specific data.
Does not include traffic on miscellaneous cables.
Source: AT&T Circuit Reports 1988–1993.

Design Capacity is defined as the cable's total useable capacity in 64 kbps. Design Capacity does not include capacity designated for cable restoration or capacity on standby pairs.
Notional Capacity is the fraction of the design capacity that is directly allocated to subscribers.
Not all activated circuits may be utilized at a given time.
CMS is an acronym for "Circuit Multiplication Service". CMS circuits are the additional circuits gained through digital compression
Utilized Circuits equals Total activated circuits minus Idle circuits.
Total derived circuits equals Utilized Circuits plus CMS circuits.
Compression rate is the fraction of Total derived circuits to Utilized circuits.
Fill Rates are defined as the fraction of Utilized circuits divided by the Design Capacity. Fill Rates of other carriers are assumed to be equal to AT&T Fill Rates.

Exhibit HSH–4.3

AT&T LATIN AMERICAN & CARIBBEAN CABLES

	1988	1989	1990	1991	1992	1993
St Thomas #3: service start =	1983					
Design Capacity	3000	3000	3000	3000	3000	3000
[2] Notional Capacity	3000	3000	3000	3000	3000	3000
AT&T share of design cap.	1612	1612	1612	1612	1612	1612
[4] AT&T share of notional cap.	1612	1612	1612	1612	1612	1612
Total activated circuits	1394	1514	1600	1612	1612	1612
Idle circuits	524	446	533	515	549	686
CMS circuits	0	0	0	0	0	0
Utilized circuits	870	1068	1067	1097	1063	926
Total derived circuits	870	1068	1067	1097	1063	926
Compression rate	1.0	1.0	1.0	1.0	1.0	1.0
AT&T Fill Rate	54.0%	66.3%	66.2%	68.1%	65.9%	57.4%
Other Fill Rate	54.0%	66.3%	66.2%	68.1%	65.9%	57.4%
Average Fill Rate	54.0%	66.3%	66.2%	68.1%	65.9%	57.4%
Private Line	20	48	50	57	52	47
Switched Voice	850	1020	1017	1040	1011	879
AT&T Switched Voice Fill Rate	52.7%	63.3%	63.1%	64.5%	62.7%	54.5%
TCS–1: service start =	1990					
Design Capacity			2880	2880	2880	2880
[1] Notional Capacity			2194	2194	2194	2194
AT&T share of design cap.			2536	2536	2536	2536
[3] AT&T share of notional cap.			1932	1932	1932	1932
Total activated circuits	0	0	1449	1486	1629	1717
Idle circuits	0	0	945	343	313	162
CMS circuits	0	0	217	1196	1578	1832
Utilized circuits	0	0	504	1143	1316	1555
Total derived circuits	0	0	721	2339	2894	3387
Compression rate			1.4	2.0	2.2	2.2
AT&T Fill Rate			19.9%	45.1%	51.9%	61.3%
Other Fill Rate			19.9%	45.1%	51.9%	61.3%
Average Fill Rate			19.9%	45.1%	51.9%	61.3%
Private Line	0	0	0	3	66	91
Switched Voice	0	0	504	1140	1250	1464
AT&T Switched Voice Fill Rate			19.9%	45.0%	49.3%	57.7%
Bahama : service start =	1972					
Design Capacity	1380	1380	1380	1380	1380	1380
[1] Notional Capacity	1380	1380	1380	1380	1380	1380
AT&T share of design cap.	1360	1360	1360	1360	1360	1360
[3] AT&T share of notional cap.	1360	1360	1360	1360	1360	1360
Total activated circuits	341	1234	1234	1234	1234	1204
Idle circuits	0	880	880	854	852	818
CMS circuits	0	0	0	0	0	0
Utilized circuits	341	354	354	380	382	386
Total derived circuits	341	354	354	380	382	386
Compression rate	1.0	1.0	1.0	1.0	1.0	1.0
AT&T Fill Rate	25.1%	26.0%	26.0%	27.9%	28.1%	28.4%
Other Fill Rate	25.1%	26.0%	26.0%	27.9%	28.1%	28.4%
Average Fill Rate	25.1%	26.0%	26.0%	27.9%	28.1%	28.4%
Private Line	30	31	31	33	35	38
Switched Voice	311	323	323	347	347	348
AT&T Switched Voice Fill Rate	22.9%	23.8%	23.8%	25.5%	25.5%	25.6%
Cuba is Key West-Havana in 1988: service start =			1950	to	1989	
is U.S.-Cuba No. 7 in 1989 – 1993: service start =			1989			
Design Capacity	24	143	143	143	143	143
[2],[1] Notional Capacity	24	143	143	143	143	143
AT&T share of design cap.	20	143	143	143	143	143
[4],[3] AT&T share of notional cap.	20	143	143	143	143	143
Total activated circuits	20	20	20	20	20	20
Idle circuits	0	0	0	0	20	20
CMS circuits	0	0	0	0	0	0
Utilized circuits	20	20	20	20	0	0
Total derived circuits	20	20	20	20	0	0
Compression rate	1.0	1.0	1.0	1.0		
AT&T Fill Rate	100.0%	14.0%	14.0%	14.0%	0.0%	0.0%
Other Fill Rate	100.0%	14.0%	14.0%	14.0%	0.0%	0.0%
Average Fill Rate	100.0%	14.0%	14.0%	14.0%	0.0%	0.0%
Private Line	3	3	3	3	0	0
Switched Voice	17	17	17	17	0	0
AT&T Switched Voice Fill Rate	85.0%	11.9%	11.9%	11.9%	0.0%	0.0%

Exhibit HSH–4.3

AT&T LATIN AMERICAN & CARIBBEAN CABLES

	1988	1989	1990	1991	1992	1993
PTAT – 1 / CARAC: service start =	1989					
Design Capacity		5760	5760	5760	5760	5760
[2] Notional Capacity		5760	5760	5760	5760	5760
AT&T share of design cap.		210	210	210	210	210
[4] AT&T share of notional cap.		210	210	210	210	210
Total activated circuits	0	30	210	210	210	210
Idle circuits	0	30	0	0	0	0
CMS circuits	0	0	0	0	0	0
Utilized circuits		0	210	210	210	210
Total derived circuits		0	210	210	210	210
Compression rate			1.0	1.0	1.0	1.0
AT&T Fill Rate		0.0%	100.0%	100.0%	100.0%	100.0%
Other Fill Rate		0.0%	100.0%	100.0%	100.0%	100.0%
Average Fill Rate		0.0%	100.0%	100.0%	100.0%	100.0%
Private Line	0	0	62	62	62	62
Switched Voice	0	0	148	148	148	148
AT&T Switched Voice Fill Rate		0.0%	70.5%	70.5%	70.5%	70.5%
St Thomas #2: service start =	1968	to	1993			
Design Capacity	845	845	845	845	845	
[1] Notional Capacity	845	845	845	845	845	
AT&T share of design cap.	719	719	719	719	719	
[3] AT&T share of notional cap.	719	719	719	719	719	
Total activated circuits	200	200	200	200	200	0
Idle circuits	0	2	33	200	200	0
CMS circuits	0	0	0	0	0	0
Utilized circuits	200	198	167	0	0	0
Total derived circuits	200	198	167	0	0	0
Compression rate	1.0	1.0	1.0			
AT&T Fill Rate	27.8%	27.5%	23.2%	0.0%	0.0%	
Other Fill Rate	27.8%	27.5%	23.2%	0.0%	0.0%	
Average Fill Rate	27.8%	27.5%	23.2%	0.0%	0.0%	
Private Line	2	2	0	0	0	0
Switched Voice	198	196	167	0	0	0
AT&T Switched Voice Fill Rate	27.5%	27.3%	23.2%	0.0%	0.0%	
Canber: service start = 1971	to	1993				
Design Capacity	480	480	480	480	480	
[1] Notional Capacity	480	480	480	480	480	
AT&T share of design cap.	84	84	84	84	84	
[4] AT&T share of notional cap.	84	84	84	84	84	
Total activated circuits	84	84	84	84	84	0
Idle circuits	3	4	84	84	84	0
CMS circuits	0	0	0	0	0	0
Utilized circuits	81	80	0	0	0	0
Total derived circuits	81	80	0	0	0	0
Compression rate	1.0	1.0				
AT&T Fill Rate	96.4%	95.2%	0.0%	0.0%	0.0%	
Other Fill Rate	96.4%	95.2%	0.0%	0.0%	0.0%	
Average Fill Rate	96.4%	95.2%	0.0%	0.0%	0.0%	
Private Line	10	9	0	0	0	0
Switched Voice	71	71	0	0	0	0
AT&T Switched Voice Fill Rate	84.5%	84.5%	0.0%	0.0%	0.0%	
Jamaica: service start = 1963	to	1993				
Design Capacity	144	144	144	144	144	
[1] Notional Capacity	144	144	144	144	144	
AT&T share of design cap.	102	102	102	102	102	
[3] AT&T share of notional cap.	102	102	102	102	102	
Total activated circuits	102	102	102	102	102	0
Idle circuits	0	0	49	55	102	0
CMS circuits	117	126	48	48	0	0
Utilized circuits	102	102	53	47	0	0
Total derived circuits	219	228	101	95	0	0
Compression rate	2.1	2.2	1.9	2.0		
AT&T Fill Rate	100.0%	100.0%	52.0%	46.1%	0.0%	
Other Fill Rate	100.0%	100.0%	52.0%	46.1%	0.0%	
Average Fill Rate	100.0%	100.0%	52.0%	46.1%	0.0%	
Private Line	4	4	8	6	0	0
Switched Voice	98	98	45	41	0	0
AT&T Switched Voice Fill Rate	96.1%	96.1%	44.1%	40.2%	0.0%	

Exhibit HSH–4.3

AT&T LATIN AMERICAN & CARIBBEAN CABLES

	1988	1989	1990	1991	1992	1993
Total Cables (to Latin America and The Caribbean)						
Design Capacity	5873	11752	14632	14632	14632	13163
Notional Capacity	5873	11752	13946	13946	13946	12477
AT&T share of design cap.	3897	4230	6766	6766	6766	5861
AT&T share of notional cap.	3897	4230	6162	6162	6162	5257
Utilized circuits	1614	1822	2375	2897	2971	3077
Total derived circuits	1731	1948	2640	4141	4549	4909
Compression rate	1.1	1.1	1.1	1.4	1.5	1.6
AT&T Fill Rate	41.4%	43.1%	35.1%	42.8%	43.9%	52.5%
Other Fill Rate	41.4%	43.1%	35.1%	42.8%	43.9%	52.5%
Average Fill Rate	41.4%	43.1%	35.1%	42.8%	43.9%	52.5%
Private Line	69	97	154	164	215	238
Switched Voice	1545	1725	2221	2733	2756	2839
AT&T Switched Voice Fill Rate	39.6%	40.8%	32.8%	40.4%	40.7%	48.4%

NOTES:
All circuits are in 64 kbps-equivalents, except for CMS and Total derived circuits which are in voice equivalent circuits.
[1] Notional Capacity from Exhibit HSH–10.3.
[2] Notional Capacity assumed to be Design Capacity.
[3] AT&T Notional Capacity from Exhibit HSH–10.3.
[4] AT&T Notional Capacity assumed to be maximum of activated circuits.
Aggregated from country-by-country and facility-specific data.
Does not include traffic on miscellaneous cables.
Source: AT&T Circuit Reports 1988–1993.

Design Capacity is defined as the cable's total useable capacity in 64 kbps. Design Capacity does not include capacity designated for cable restoration or capacity on standby pairs.
Notional Capacity is the fraction of the design capacity that is directly allocated to subscribers.
Not all activated circuits may be utilized at a given time.
CMS is an acronym for "Circuit Multiplication Service". CMS circuits are the additional circuits gained through digital compression.
Utilized Circuits equals Total activated circuits minus Idle circuits.
Total derived circuits equals Utilized Circuits plus CMS circuits.
Compression rate is the fraction of Total derived circuits to Utilized circuits.
Fill Rates are defined as the fraction of Utilized circuits divided by the Design Capacity. Fill Rates of other carriers are assumed to be equal to AT&T Fill Rates.

EXHIBIT HSH-5

UTILIZED CAPACITY FOR
SWITCHED VOICE AND PRIVATE LINE SERVICES

Exhibit HSH–5.1

Switched Voice and Private Line Services

		1988	1989	1990	1991	1992	1993
Utilized COMSAT Circuits.					**Source: COMSAT Circuit Matrices**		
[1]	Caribbean / Latin America	5,327	6,503	6,832	6,935	6,847	6,613
[1]	East Asia / Oceania	7,106	6,999	6,502	6,016	6,104	5,509
[1]	Europe / Mediterranean / Middle East	15,487	12,737	11,819	10,144	9,301	8,452
	Subtotal	27,920	26,239	25,152	23,095	22,252	20,573
[1]	Rest of Latin America	877	1,039	1,268	1,423	1,523	1,281
[1]	Rest of AOR	1,381	1,580	1,921	2,585	2,822	2,695
[1]	Rest of POR	163	192	277	285	406	382
	Subtotal	2,421	2,811	3,465	4,293	4,751	4,358
	Total AOR	23,072	21,859	21,839	21,087	20,494	19,041
	Total POR	7,269	7,191	6,779	6,301	6,509	5,890
	Total	30,341	29,050	28,618	27,388	27,003	24,932
Estimates: Cable Utilized Circuits.							
	Total Utilized AT&T Circuits on COMSAT.				**Source: Exhibit HSH–3**		
[2]	Caribbean / Latin America	4,161	4,410	4,512	4,239	3,038	3,127
[2]	East Asia / Oceania	4,628	4,130	3,046	2,423	2,677	2,360
[2]	Europe / Mediterranean / Middle East	9,751	6,365	5,342	4,953	4,985	4,544
	Subtotal	18,540	14,905	12,900	11,615	10,700	10,031
[2]	Rest of Latin America	703	712	859	924	817	556
[2]	Rest of AOR	1,306	1,372	1,646	1,646	1,667	1,518
[2]	Rest of POR	79	85	93	101	97	101
	Subtotal	2,088	2,169	2,598	2,671	2,581	2,175
	Total AOR	15,921	12,859	12,359	11,762	10,507	9,745
	Total POR	4,707	4,215	3,139	2,524	2,774	2,461
	Total	20,628	17,074	15,498	14,286	13,281	12,206
	Total Utilized AT&T Circuits on Cable.				**Source: Exhibit HSH–3**		
[3]	Caribbean / Latin America	1,809	2,112	2,633	3,221	3,259	3,155
[3]	East Asia / Oceania	855	2,032	2,881	3,452	4,422	5,653
[3]	Europe / Mediterranean / Middle East	7,310	7,992	8,852	9,764	10,934	11,696
	Subtotal	9,974	12,136	14,366	16,437	18,615	20,504
[3]	Rest of Latin America	4	4	8	4	5	5
[3]	Rest of AOR	5	5	5	5	0	0
[3]	Rest of POR	0	0	0	0	0	0
	Subtotal	9	9	13	9	5	5
	Total AOR	9,128	10,113	11,498	12,994	14,198	14,856
	Total POR	855	2,032	2,881	3,452	4,422	5,653
	Total	9,983	12,145	14,379	16,446	18,620	20,509
	Cumulative Cable Design Capacity.				**Source: Exhibit HSH–10.3**		
[4]	Trans–Caribbean	6,097	11,834	14,632	14,632	14,632	13,163
[4]	Trans–Pacific	9,927	9,927	9,927	22,023	37,143	43,716
[4]	Trans–Atlantic	16,651	33,661	33,661	33,661	71,461	93,296
	AT&T Cable Fill Rate.		**Source: Exhibits HSH–4.1, HSH–4.2, and HSH–4.3**				
[5]	Trans–Caribbean	41.42%	43.07%	35.10%	42.82%	43.91%	52.50%
[5]	Trans–Pacific	13.59%	32.71%	46.50%	49.29%	31.23%	35.89%
[5]	Trans–Atlantic	57.44%	54.84%	63.02%	68.85%	34.56%	27.54%
	Estimated Cable Utilized Circuits.						
[6]	Caribbean / Latin America	2,525	5,097	5,136	6,265	6,425	6,911
[6]	East Asia / Oceania	1,349	3,247	4,616	10,855	11,599	15,692
[6]	Europe / Mediterranean / Middle East	9,564	18,460	21,215	23,176	24,698	25,697
	Subtotal	13,439	26,804	30,967	40,296	42,722	48,299
[7]	Rest of Latin America	5	6	12	6	9	12
[7]	Rest of AOR	5	6	6	8	0	0
[7]	Rest of POR	0	0	0	0	0	0
	Subtotal	10	12	18	14	9	12
	Total AOR	12,100	23,569	26,369	29,456	31,133	32,619
	Total POR	1,349	3,247	4,616	10,855	11,599	15,692
	Total	13,449	26,816	30,985	40,310	42,732	48,311

Exhibit HSH–5.1

Switched Voice and Private Line Services

		1988	1989	1990	1991	1992	1993
Estimated Total Market of Utilized Circuits = COMSAT + Cable.							
[8]	Caribbean / Latin America	7,852	11,600	11,968	13,200	13,273	13,524
[8]	East Asia / Oceania	8,455	10,246	11,118	16,870	17,702	21,200
[8]	Europe / Mediterranean / Middle East	25,051	31,197	33,033	33,320	34,000	34,149
	Subtotal	41,359	53,043	56,119	63,391	64,975	68,873
[9]	Rest of Latin America	882	1,044	1,279	1,429	1,532	1,293
[9]	Rest of AOR	1,386	1,586	1,927	2,593	2,822	2,695
[9]	Rest of POR	163	192	277	285	406	382
	Subtotal	2,431	2,822	3,483	4,307	4,760	4,370
	Total AOR	35,172	45,427	48,208	50,542	51,627	51,661
	Total POR	8,619	10,439	11,394	17,156	18,108	21,582
	Total	43,790	55,866	59,602	67,698	69,735	73,243
Estimated COMSAT Market Share.							
[10]	Caribbean / Latin America	67.84%	56.06%	57.08%	52.54%	51.59%	48.90%
[10]	East Asia / Oceania	84.04%	68.31%	58.48%	35.66%	34.48%	25.98%
[10]	Europe / Mediterranean / Middle East	61.82%	40.83%	35.78%	30.44%	27.36%	24.75%
	Subtotal	67.51%	49.47%	44.82%	36.43%	34.25%	29.87%
[11]	Rest of Latin America	99.43%	99.44%	99.08%	99.57%	99.39%	99.11%
[11]	Rest of AOR	99.62%	99.64%	99.70%	99.70%	100.00%	100.00%
[11]	Rest of POR	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	Subtotal	99.58%	99.59%	99.49%	99.67%	99.80%	99.74%
	Total AOR	65.60%	48.12%	45.30%	41.72%	39.70%	36.86%
	Total POR	84.34%	68.89%	59.49%	36.73%	35.95%	27.29%
	Total	69.29%	52.00%	48.01%	40.46%	38.72%	34.04%

NOTES:All circuits are in 64 kbps–equivalents.
AOR = "Atlantic Ocean Region". The AOR includes Caribbean/Latin America, Europe/Mediterranean/Middle East, Rest of Latin America, and Rest of AOR.
POR = "Pacific Ocean Region". The POR includes East Asia/Oceania and Rest of POR.
[1] COMSAT Traffic Matrices filed with the FCC. Aggregated from country– and service–specific data according to Exhibit HSH–1. Adjusted to net out downlink to U.S. Territories, half–circuits between U.S. Territories, and to include traffic from Hawaii to overseas locations. Also includes private line fractional transponder leases.
[6] = [5] * [4]. Assumes that overall cable fill rate is equal to AT&T's cable fill rate.
[7] = ([3] / [2]) * [1]. Assumes total use of cable and COMSAT is proportional to AT&T's use of cable and COMSAT. i.e. COMSAT's share of Total Market = COMSAT's share of AT&T traffic.
[8] = [1] + [6]. Note, Switched Voice and Private Line services on separate satellite systems are omitted.
[9] = [1] + [7]. Note, Switched Voice and Private Line services on separate satellite systems are omitted.
[10] = [1] / [8].
[11] = [1] / [9].

Exhibit HSH–5.2

Switched Voice Service

		1988	1989	1990	1991	1992	1993
Utilized AT&T Switched Voice Circuits on COMSAT.						**Source: Exhibit HSH–3**	
[1]	Caribbean / Latin America	4,114	4,326	4,346	4,074	2,784	2,609
[1]	East Asia / Oceania	4,414	3,797	2,592	1,882	1,973	1,642
[1]	Europe / Mediterranean / Middle East	9,544	6,080	5,081	4,651	4,685	4,295
	Subtotal	18,072	14,203	12,019	10,607	9,442	8,546
[1]	Rest of Latin America	692	701	839	902	792	530
[1]	Rest of AOR	1,300	1,369	1,610	1,638	1,598	1,447
[1]	Rest of POR	78	84	92	97	93	98
	Subtotal	2,070	2,154	2,541	2,637	2,483	2,075
	Total AOR	15,650	12,476	11,876	11,265	9,859	8,881
	Total POR	4,492	3,881	2,684	1,979	2,066	1,740
	Total	20,142	16,357	14,560	13,244	11,925	10,621
Utilized AT&T Switched Voice Circuits on Cables.						**Source: Exhibit HSH–3**	
[2]	Caribbean / Latin America	1,731	2,004	2,479	3,057	3,044	2,917
[2]	East Asia / Oceania	772	1,763	2,411	2,742	3,299	4,161
[2]	Europe / Mediterranean / Middle East	6,345	6,607	6,854	6,955	7,063	6,551
	Subtotal	8,848	10,374	11,744	12,754	13,406	13,629
[2]	Rest of Latin America	4	4	4	0	0	0
[2]	Rest of AOR	5	5	5	5	0	0
[2]	Rest of POR	0	0	0	0	0	0
	Subtotal	9	9	9	5	0	0
	Total AOR	8,085	8,620	9,342	10,017	10,107	9,468
	Total POR	772	1,763	2,411	2,742	3,299	4,161
	Total	8,857	10,383	11,753	12,759	13,406	13,629
Total Utilized AT&T Switched Voice Circuits = COMSAT + Cables							
[3]	Caribbean / Latin America	5,845	6,330	6,825	7,131	5,828	5,526
[3]	East Asia / Oceania	5,186	5,560	5,003	4,624	5,272	5,803
[3]	Europe / Mediterranean / Middle East	15,889	12,687	11,935	11,606	11,748	10,846
	Subtotal	26,920	24,577	23,763	23,361	22,848	22,175
[3]	Rest of Latin America	696	705	843	902	792	530
[3]	Rest of AOR	1,305	1,374	1,615	1,643	1,598	1,447
[3]	Rest of POR	78	84	92	97	93	98
	Subtotal	2,079	2,163	2,550	2,642	2,483	2,075
	Total AOR	23,735	21,096	21,218	21,282	19,966	18,349
	Total POR	5,264	5,644	5,095	4,721	5,365	5,901
	Total	28,999	26,740	26,313	26,003	25,331	24,250
COMSAT Market Share in Utilized AT&T Switched Voice Circuits							
[4]	Caribbean/Latin America	70.38%	68.34%	63.68%	57.13%	47.77%	47.21%
[4]	East Asia/Oceania	85.11%	68.29%	51.81%	40.70%	37.42%	28.30%
[4]	Europe/Mediterr/M East	60.07%	47.92%	42.57%	40.07%	39.88%	39.60%
	Subtotal	67.13%	57.79%	50.58%	45.40%	41.33%	38.54%
[4]	Rest of Latin America	99.43%	99.43%	99.53%	100.00%	100.00%	100.00%
[4]	Rest of AOR	99.62%	99.64%	99.69%	99.70%	100.00%	100.00%
[4]	Rest of POR	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
	Subtotal	99.57%	99.58%	99.65%	99.81%	100.00%	100.00%
	Total AOR	65.94%	59.14%	55.97%	52.93%	49.38%	48.40%
	Total POR	85.33%	68.76%	52.68%	41.92%	38.51%	29.49%
	Total	69.46%	61.17%	55.33%	50.93%	47.08%	43.80%

NOTES: All circuits are in 64 kbps–equivalents.
AOR = "Atlantic Ocean Region". The AOR includes Caribbean/Latin America, Europe/Mediterranean/Middle East, Rest of Latin America, and Rest of AOR.
POR = "Pacific Ocean Region". The POR includes East Asia/Oceania and Rest of POR.
[1] = Total COMSAT Circuits – COMSAT Private Line Circuits.
[2] = Total Cable Circuits – Cable Private Line Circuits.
[3] = [1] + [2]. Switched Voice on separate satellite systems is omitted.
[4] = [1] / [3]